Claims

1. A processing chamber for a substrate, the chamber configured to operate at a positive pressure, comprising:

a load port slot, the load port slot providing access for the substrate into and out of the chamber;

a chamber door, the chamber door positioned inside the chamber, the chamber door configured to seal against an internal surface of the chamber thereby blocking access through the load port slot, wherein an internal pressure of the chamber assists in sealing the chamber door against the internal surface of the chamber; and

a door actuating mechanism, the door actuating mechanism configured to move the door along a door path, the door path positioned at an angle to a path to be traversed by the substrate.

2. The processing chamber as recited in claim 1, wherein the chamber door includes a first actuator for closing the door and a second actuator for opening the door.

3. The processing chamber as recited in claim 2, wherein a size of the second actuator prevents the door from opening when the internal pressure of the chamber is at or above a defined pressure.

4. The processing chamber as recited in claim 1, wherein the chamber door forms a seal against the internal surface of the by compressing an o-ring.

5. The processing chamber as recited in claim 2, further including:

a third actuator, the third actuator configured to prevent one of the first and second actuators from moving the chamber door.

6. A chamber for processing a semiconductor substrate, the chamber configured to operate while pressurized, comprising:

a port, the port providing access for the semiconductor substrate into and out of the chamber;

a moveable door, the door configured to utilize a pressure differential between an internal pressure of the chamber and an external pressure outside of the chamber to seal the port, wherein the door forms a seal with an internal surface of the chamber enclosing the port; and

a control mechanism, the control mechanism configured to transition the moveable door between an open position and a sealed position, the transition between the open position and the sealed position occurring at an angle to the axis of a path to be traversed by the semiconductor substrate.

7. The chamber as recited in claim 6, wherein an interlock provides assurance that the chamber door is closed prior to pressurizing the chamber.

8. The chamber as recited in claim 6, wherein the moveable door is positioned inside the chamber.

9. The chamber as recited in claim 6, further comprising:

at least one rod, the at least one rod having a first and second end, the first end attached to the chamber door, the second end attached to a bar, the bar in communication with at least one actuator.

10. The chamber as recited in claim 9, wherein the at least one actuator includes an actuator for closing the door and an actuator for opening the door.

11. The chamber as recited in claim 6, wherein the moveable door includes one of a mechanical safety, an electrical safety and a software safety.

12. A method for sealing a processing chamber with an intrinsically safe chamber door, the chamber door positioned on the inside of the chamber, wherein the processing chamber is configured to operate at an elevated internal pressure, comprising:

transitioning a substrate through an opening of the processing chamber;

positioning the chamber door to form an initial seal against an internal surface of the chamber around the opening;

creating a pressure in the chamber; and

pressure-reinforcing the initial seal between the chamber door and the internal surface of the chamber, wherein the pressure produces a sealing force against the chamber door which is transferred to the internal surface of the chamber, such that as the pressure increases the sealing force increases.

13. The method as recited in claim 12 further including:

providing one of a mechanical safety, an electrical safety and a software safety.

14. The method as recited in claim 12, wherein the chamber door forms a seal by compressing an elastomeric material against the internal surface of the chamber.

15. The method as recited in claim 12, wherein the pressure is up to and including about 5000 pounds per square inch.

16. The method as recited in claim 13, wherein the pressure of the chamber is configured to be monitored by either or both of a pressure transducer and a pressure switch.

17. A method for sealing a semiconductor processing chamber with an interlocked chamber door, the chamber door located on the inside of the chamber, wherein the processing chamber is configured to operate at a positive pressure, comprising:

locating the chamber door to form an initial seal against an internal surface of the chamber around a port loading slot;

pressurizing the chamber;

providing multiple interlocking schemes to prevent the chamber door from opening when the chamber is at or above a defined pressure and

compressing the initial seal between the chamber door and the internal surface of the chamber, wherein the chamber pressure is used to compress the initial seal.

18. The method as recited in claim 17, wherein locating the chamber door to form an initial seal further includes:

transitioning the door along an axis, the axis at an angle to a path traversed by a semiconductor substrate.

19. The method as recited in claim 17, wherein the multiple interlocking schemes include one of a mechanical safety, an electrical safety and a software safety.

20. The method as recited in claim 17, wherein the chamber door is made of stainless steel.

21. The method as recited in claim 17, further including:

providing a scavenger hood proximate to the port loading slot.